AN EXPERIMENTAL STUDY OF THE EFFECTS ON ACADEMIC ACHIEVEMENT AND ANXIETY LEVELS OF HIGH SCHOOL ALGEBRA I STUDENTS WHEN GRADE RESULTS ARE WITHHELD FOR A PRESCRIBED PERIOD OF TIME

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by

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CHAPTER I

INTRODUCTION

I. PURPOSE OF THE STUDY

It was the purpose of this two-fold experimental study to examine a means of: (1) evaluating the effects on academic achievement, and (2) evaluating and observing anxiety levels of Algebra I students of the Carlisle Community High School, Carlisle, Iowa, based upon the withholding of all grades for a prescribed period of time. The study was limited to the academic area of Algebra I.

II. BACKGROUND OF THE PROBLEM

Presently, at the Carlisle Community High School, located in southeast Warren County, Iowa, where this study took place, student achievement is contingent upon the five point letter grade system of marking utilizing plus and minus symbols as follows:

Means of Expressing Marks			Percent of Pupils	
Quality	Letter System	% System	Normal Distribution	Possible Variation
Superior	A+ A A-	98-100 96-97 94-95	7	0-15
Above Average	B+ B B-	92-93 89-91 87-88	24	15-30
Average	C+ C C-	85-86 82-84 80-81	38	30-50
Below Average	D+ D D-	79 77-78 75-76	24	15-30
Failure	F	Below 75	7	0-15

The evaluation of this present grading practice is a complex procedure because most schools do not take evaluation into consideration until it becomes necessary to justify continuation or discontinuation of such a grading practice.

III. NEED FOR THE STUDY

School administrators have attempted to search for an ideal method of student evaluation. In contrast to the present five point letter grade system, the pass-fail standard has often been suggested as an alternative. The pass-fail standard sets a certain minimum requirement for all students but makes no attempt to classify their achievements beyond that standard.

The objective and scope of this study was directed hopefully to determine a practical method of student evaluation based on a slight modification of the five point letter grade system, that being the withholding of grades for a definite period of time.

Recommendations regarding methods of student evaluation is expected of school administrators. Such recommendations for institutional change should be researched and analyzed before tentative decisions are presented to the school board which is responsible for initiating policies for all innovations.

IV. PROCEDURE

The objectives of this study were to examine a means of evaluating the effects on academic achievement and anxiety levels of high school Algebra I students who were denied the knowledge of all their test scores for a prescribed period of time. Although it was not stated as an objective, it was hoped that a "best possible" grading system could be determined to meet the needs and demands of both the student and the teacher.

The two key variables intervening between knowledge of test scores and academic performance were withholding of grades, and the changes in student anxiety levels.

Selection of Subjects

Forty-three pupils selected for this study were students of the ninth grade. They were enrolled in the two general

Algebra I classes in the Carlisle Community High School in the 1969-70 school year.

Control Group

The control group was initially comprised of twenty-four students, four of whom were dropped from this group due to failing grades at the end of the first semester. The control group was instructed by a colleague of the investigator who taught his class in much the same manner as the experimental group. Of course, there were slight variations in content and method to meet the individual personalities of his class. It is felt, however, that these differences were of such a nature as not to influence the outcome of this study.

The method of teaching was primarily based upon teacher question-student response in regard to classroom discussion. The group received grades from the five point letter grade system on a daily basis for the first two nine-weeks' marking periods. This was equivalent to the first semester, the duration of the study.

Experimental Group

This group was comprised of nineteen students who were taught by the investigator. The method of instruction used for the experimental group was the same as that described in the preceding section for the control group.

The experimental group, as shown in Table I, had all its grades withheld for the first nine-weeks' marking period

of the first semester. After this period of time, the experimental group was randomly divided in half for the second marking period. One half of the class was receiving grades on a daily basis consistent with the five point letter grade system as was the control group. The remaining half of the experimental group continued to have its grades withheld until the completion of the second nine-weeks' marking period as they were accustomed in the first quarter.

TABLE I

SEQUENCE OF EVENTS FOR BOTH EXPERIMENTAL AND CONTROL GROUPS

Group	First 9 weeks	Second 9 weeks
Experimental Group	Grades withheld from all pupils	Grades withheld from one-half the pupils
Control Group	Grades known to all pupils	Grades known to all pupils

Collection of Data

The general situation regarding the collection of data by a questionnaire sequence was explained beforehand by the investigator to each student of both the control and experimental groups. The information about each selected student at all stages of the inquiry was treated in strict confidence.

Academic achievement was based on the results of homework, quizes and tests frequently administered during the one

semester study. Data concerning student grade expectations, biographical information, student motivations, student anxieties, and methods of study was collected through a questionnaire sequence administered to both groups at five different intervals throughout the study. These questionnaires were administered as follows: (1) at the beginning of the first nine-weeks' marking period; (2) at the end of the fourth week of the first quarter; (3) at the end of the first marking period; (4) at the end of the fourth week of the second quarter; and (5) at the end of the semester. Appendixes A through O are copies of the questionnaires which were given at the previously mentioned times.

This writer also wished to find out how grade-conscious or grade-oriented the rest of the student body at Carlisle Community High School was. To accomplish this, a questionnaire regarding three different types of grading systems was administered toward the end of the second semester of the 1969-70 school year at the Carlisle Community High School. The three grading systems to which the questionnaire referred was (1) the present five point letter grade system; (2) the pass-fail system; and (3) the modification of the five point letter grade system known in this study as the withholding of grades for a prescribed period of time. All three types of grading systems were carefully explained by the investigator to all those answering the questionnaire. Appendix P is a copy of the questionnaire.

Presentation of the Data

The data obtained from the series of questionnaires was gathered, compiled, and tabulated in Chapter III. These questionnaires, in addition to results on homework, quizes and tests, were used to examine any effects on academic and/or anxiety levels that might have occurred during the study in which knowledge of grades was virtually unknown.

CHAPTER II

REVIEW OF RELATED LITERATURE

Examination results may suffer if students are made aware, at an early period, of their scores on tests. According to this argument, low score achievers become demoralized and high score achievers become too complacent. The later academic performance of both, therefore, is inferior to what it would have been had the students been kept in ignorance of their test scores.[1]

The relationship between academic performance and knowledge of test scores of sixty engineering students enrolled at the University of St. Andrews, Scotland, was examined. The students' were divided up into two matched groups:

1. Group K was given detailed knowledge of their test scores.
2. Group NK did not receive any knowledge of their test scores.[2]

At the end of one year's time, group K performed better than group NK. This finding is related to the role of anxiety in academic performance and achievement motivation. Group K's superiority is interpreted as "originating in improved self-evaluation through social comparison with knowledge of test scores acting catalytically."[3]

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[1] J. M. Flook and Usha Saggar, "Academic Performance With and Without Knowledge of Scores of Tests of Intelligence, Aptitude and Personality," Journal of Educational Psychology, LIX (December, 1968), 395.

[2] Ibid.

[3] Ibid.

According to the studies of Flook and Saggar:

> The relationship between anxiety and performance obeys the curvilinear Yerkes-Dottson principle, it is held that students who know their test scores are low are impeded by overanxiety in their later work; whereas those who know their scores are high in their self-satisfaction, fall below that "happy medium" level of anxiety that spurs them on to their best performance.[1]

Previous research suggests a curvilinear relationship between anxiety and performance with differential anxiety as the mediating factor. According to Atkinson's theory of achievement motivation:

> The strength of motivation to perform a task when no alternatives are offered should be greatest when such patterns are most uncertain about the results,[2] that is when the probability, Ps, is 0.50.

"There is evidence," say Atkinson and Feather in 1966, "that individual differences in intelligence or aptitude may serve as cues to define a person's probability success, in a competitive academic setting."[3]

Donald J. Christensen, research assistant at Upper Midwest Regional Educational Laboratory in Minneapolis, Minnesota, showed in a project that the use of grades as rewards for learnings were not significant factors in providing student impetus to strive for continued learnings, which may be rewarded, with high or passing grades. Furthermore, pupil

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[1] Ibid.

[2] Ibid., p. 398.

[3] Atkinson, "Motivational Determinants of Risk-Taking Behavior," Psychological Review, LXIV (1967), 359.

learnings did not decrease as might be expected when the possibility of low grades or failing situations existed.[1]

The students in Christensen's study reflected support for the traditional classroom grading procedure in an opinionnaire despite the fact that the results indicated the pupils gained in learning in lieu of their objectives. Therefore, this study suggested that the traditional grading system may not have to be a necessary function to stimulate pupil learning.[2]

B. L. Cauble described the following observation in regard to anxiety in intermediate grade school children:

> In several groups, high anxiety levels made children less capable at complex tasks than low or moderate anxious children. . . . there was a tendancy for high anxious children to have lower I.Q.'s . . . High anxious children with high intelligence were no more able to perform complex tasks than high-anxious children with more "normal" intelligence . . . High anxiety was more often associated with poor scores and accompanied by poor performance with boys and girls.[3]

According to R. N. Marso, professor at the University of Nebraska Teachers College, students classified in the high test anxiety group performed as well as the students classified

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[1]Donald J. Christensen, "The Effect of Discontinued Grade Reporting on Pupil Learning," The Arithmetic Teacher, XV (December, 1968), 726.

[2]Ibid.

[3]Ben Leroy Cauble, "Anxiety in Intermediate Grade Children and its Relationship with their Scores on Measures of Personality Factors, (unpublished dissertation abstract, Southern Illinois University, 1964), p. 5150.

in the low anxiety group on the achievement. Marso, also reported the following:

> Students who were graded for their performance on the unit examinations achieved greater on the unit tests than did the students not graded on the unit tests, but the difference in favor of the graded students on the criterion measures only approached statistical significance. . . . the testing condition of frequent, graded unit examinations with feedback did not reduce the inhibiting effects of test anxiety upon student performance.[1]

Parents often go to extremes in demanding high grades, often placing frightful pressures on their children. Some crack under it. According to the New Jersey Department of Education in 1960-63, a total of forty-one students committed suicide and seven hundred and thirty-eight tried to do so but failed due to the tremendous grade pressure placed upon them.[2]

Threatening students with low grades has caused many students to study content in which they were totally uninterested. High grades serve as an enforcer and an incentive for students to learn. Fear of failure contributes to a higher level of anxiety over testing and grades resulting in a stressful situation inhibiting the learning capabilities of a student.[3]

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[1]Ronald Nicholas Marso, "Classroom Testing Procedures, Test Anxiety, and College Achievement," (unpublished dissertation abstract, The University of Nebraska Teachers College, 1968), p. 1785-A.

[2]Richard Reynolds, "Grade Idolatry Blamed for Poor Education," The Los Angeles Times.

[3]George J. Mouly, Psychology for Effective Teaching (New York: Holt, Rinehart and Winston, 1960), p. 395.

Fear of how grades stimulate anxious students to a level of arousal which lessens learning effectiveness. However, non-anxious students are stimulated to a less complacent arousal level with a resulting increase in learning effectiveness.[1]

Summary

In summary, authorities seem to agree that there is an effect upon students' academic achievement and their respective levels of anxiety when the student is not aware of his grades. However, the authorities cited in the review of related literature did not agree on the same types of effects that took place in their studies.

This investigator did not make any prior assumptions concerning the increase or decrease of academic achievement and/or anxiety levels upon the withholding of grades. However, it was the contention of this writer that the academic performance based upon achievement in the experimental group was affected, due to the withholding of grades. The importance, meaning, and value which these students placed upon their grade achievement was in direct ratio to the anxiety which obtained when the students' grades were withheld.

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[1]L. J. Cronbach, Educational Psychology (second edition; New York: Harcourt, Brace and World, 1962), p. 595.

CHAPTER III

FINDINGS

The findings of this experimental study were based on a series of questionnaires administered to both experimental and control groups at various times throughout this project. A schedule of these times was given in Chapter I as part of the procedure. The results of the data that were obtained from the questionnaire sequence are given within this chapter.

Findings of the Grade Expectation Questionnaires

At key periods of time throughout the study, as indicated in the procedure of Chapter I under collection of data, students were asked what grade they expected at that time. Both control and experimental groups responded to this questionnaire.

At the end of the first and second nine-weeks' marking periods, the grade expectation questionnaires pertaining to the experimental group were compared with the students' actual nine-weeks' grades. This was done to check the accuracy of the experimental students' grade expectations.

Table II has the grade expectation questionnaire results of both experimental and control groups. The results were based on the same questionnaire administered at five different times to both groups.

TABLE II

GRADE EXPECTATION OF BOTH EXPERIMENTAL AND CONTROL GROUPS AT KEY PERIODS OF TIME

Questionnaire #	Group	Number of Students Receiving A	B	C	D	F
1	Experimental	0	11	8	0	0
	Control	1	13	10	0	0
2	Experimental	0	3	13	2	1
	Control	10	8	4	1	1
3	Experimental	1	5	9	4	0
	Control	3	11	8	2	0
4	Experimental	1	6	10	1	0
	Control	7	4	6	5	0
5	Experimental	3	6	5	5	0
	Control	4	4	5	7	0

Table III has the grade expectation questionnaire results and the actual grades that the experimental students received at the end of the first and second nine weeks.

TABLE III

EXPECTED AND ACTUAL GRADES OF THE EXPERIMENTAL GROUP AT THE END OF THE FIRST AND SECOND NINE WEEKS

End of Nine Week Period	Group	Actual Grade					Expected Grade				
		A	B	C	D	F	A	B	C	D	F
1	Experimental	1	6	8	4	0	1	5	9	4	0
2	Experimental Not getting grades	2	4	4	0	0	3	4	3	0	0
	Experimental Getting grades	0	3	3	3	0	0	2	2	5	0

Findings of the Student Inventory Questionnaire

The questionnaires were so stated as to call for opinions, attitudes, ideas, and criticisms. To make the replies as clear and meaningful as possible, each question is stated, answers tabulated and presented for the questionnaire sequence. Many of the questions were repeated on some or all of the successive questionnaires in the sequence. Table IV is a tabulation of the answers for the student inventory questionnaire.

TABLE IV

TABULATED ANSWERS FOR STUDENT INVENTORY QUESTIONNAIRES

1. Do your parents pressure you on how well you are doing in school?

Questionnaire #	Group	Number Responding Yes	No
2	Experimental	10	9
3	Experimental	6	13
	Control	8	6
5	Experimental	7	12
	Control	4	16

2. Are you worried where you stand in this class in regard to your grade?

Questionnaire #	Group	Number Responding Yes	No
2	Experimental	11	8
3	Experimental	9	10
	Control	8	16
5	Experimental	8	11
	Control	12	8

3. Do you study in a quiet place?

Questionnaire #	Group	Number Responding Yes	No
2	Experimental	13	6
3	Control	14	9
5	Experimental	11	8
	Control	10	10

TABLE IV (continued)

4. Have your study habits changed since the beginning of this school year?

Questionnaire #	Group	Number Responding Yes	No
2	Experimental	7	12
3	Experimental	8	11
	Control	6	17
5	Experimental	8	11
	Control	4	15

5. Are you studying more for this class than your other subjects?

Questionnaire #	Group	Number Responding Yes	No
2	Experimental	12	7
3	Experimental	13	6
	Control	12	12
5	Experimental	14	5
	Control	11	9

6. Do you like being in this class where no grades are assigned to tests or homework?

Questionnaire #	Group	Number Responding Yes	No
2	Experimental	16	3
3	Experimental	3	15
5	Experimental	17	2

TABLE IV (continued)

7. Do you study harder for this class, because you do not know your grade?

Questionnaire #	Group	Number Responding Yes	No
2	Experimental	9	10
3	Experimental	4	15
5	Experimental	11	8

8. Do you think it is fair to study for a test, and not receive a grade for it?

Questionnaire #	Group	Number Responding Yes	No
2	Experimental	6	13
3	Experimental	7	11
	Control	7	17
5	Control	12	8

9. Are you more relaxed when you don't know your grades?

Questionnaire #	Group	Number Responding Yes	No
2	Experimental	1	18
3	Experimental	3	16

10. Are you more relaxed when you receive your grades after each test in Algebra I?

Questionnaire #	Group	Number Responding Yes	No
3	Control	19	5
5	Control	15	5

TABLE IV (continued)

11. Are you more nervous or upset when you don't know your grades?

Questionnaire #	Group	Number Responding Yes	No
2	Experimental	10	9
3	Experimental	9	10

12. Are you more nervous or upset when you receive your grades after each test in Algebra I?

Questionnaire #	Group	Number Responding Yes	No
3	Control	9	15
5	Control	6	14

13. Would you rather not know your grades until report cards time in your other subjects?

Questionnaire #	Group	Number Responding Yes	No
2	Experimental	2	17
3	Experimental	2	17

14. Would you rather not know your grades in Algebra I until report card time?

Questionnaire #	Group	Number Responding Yes	No
3	Control	2	22
5	Experimental	6	13
	Control	1	19

TABLE IV (continued)

15. Do you think you have learned more by not knowing your grades in Algebra I?

Questionnaire #	Group	Number Responding Yes	No
2	Experimental	6	13
3	Experimental	4	15
5	Experimental	3	15

16. Do you think you have learned more by knowing your grades in Algebra I?

Questionnaire #	Group	Number Responding Yes	No
3	Control	16	8
5	Control	14	6

17. Do you think you would have learned more if you would have known your grades in Algebra I?

Questionnaire #	Group	Number Responding Yes	No
2	Experimental	5	14
3	Experimental	5	14

18. Do you think you would have learned more by not knowing your grades in Algebra I?

Questionnaire #	Group	Number Responding Yes	No
3	Control	4	20

TABLE IV (continued)

19. Are you more relaxed second 9 weeks in Algebra I?

Questionnaire #	Experimental Group	Number Responding Yes	No
5	Receiving grades	4	5
	Not receiving grades	5	5
Total		9	10

20. Are you more nervous or upset second 9 weeks in Algebra I?

Questionnaire #	Experimental Group	Number Responding Yes	No
5	Receiving grades	2	7
	Not receiving grades	3	7
Total		5	14

21. Are you glad that you were placed in Your Group for the second nine weeks?

Questionnaire #	Experimental Group	Number Responding Yes	No
5	Receiving grades	7	2
	Not receiving grades	2	8
Total		9	10

TABLE IV (continued)

22. Do you think you have learned more in the Group you are in second nine weeks?

Questionnaire #	Experimental Group	Number Responding Yes	No
5	Receiving grades	1	8
	Not receiving grades	0	10
Total		1	18

Student Comments at the End of the Third Nine Weeks

At the completion of the third nine weeks, the students of the experimental group were asked which system of grading they preferred--either receiving grades after each test, quiz or homework assignment or withholding of all grades until the end of the nine week period. The investigator felt replies by students of the experimental group indicated a general preference and acceptance of the present five point letter grade system rather than having their grades withheld until the end of the nine week period.

Some of the written comments by students of the experimental group are quoted below:

1. "After I completed the experiment, the next nine weeks I got a higher grade. I am better off when I know my grades."

2. "I am more relaxed to see my grades so that I can figure from them what I may get."

3. "I am glad I am getting grades now. . ."

4. "Getting grades or not getting grades doesn't make any difference to me. I don't study any harder either way."

5. "I like to get grades because I like to determine my grade."

6. "I feel when I am receiving grades, I know exactly where I stand."

7. "I think that knowing my scores made me too confident of myself, and I didn't worry about Algebra as much. I did study harder when I didn't know my grades."

8. "I am feeling more relaxed because I am getting grades."

9. "I would not like to be on a system where grades are withheld until the end of nine weeks."

10. "I like getting grades."

11. "It doesn't matter what system I'm on."

12. "I feel more relaxed now that I get my grades. I can tell what I have to get on a test or quiz to help get a certain grade."

13. "I'm happy now that I'm getting grades because I know where I stand and I could improve if my grades begin to fall."

Findings of the Grading System Questionnaire

The three different grading systems to which the questionnaire referred was (1) the present five point letter grade system; (2) the pass-fail system; and (3) the modification of

the five point letter grade system known in this study as the withholding of grades for a prescribed period of time.

Table V shows a comparison between the pass-fail and the present five point letter grade systems according to student preference.

TABLE V

A COMPARISON BETWEEN THE PASS-FAIL SYSTEM AND THE PRESENT FIVE POINT LETTER GRADE SYSTEM ACCORDING TO STUDENT PREFERENCE

Grading System	9th Grade	10th Grade	11th Grade	12th Grade	Experi-mental	School
Pass-Fail	23	15	6	7	6	51
Present five point letter grade system	33	33	29	14	10	109
Total	56	48	35	21	16	160

Of the 56 freshman students answering the questionnaire, 23 preferred the pass-fail system while 33 favored the present five point letter grade system.

Of the 48 sophomores answering the questionnaire, 15 preferred the pass-fail system while 33 favored the present five point letter grade system.

Of the 35 junior students answering the questionnaire, 6 preferred the pass-fail system while 29 favored the present five point letter grade system.

Of the 21 senior students answering the questionnaire, 7 preferred the pass-fail system while 14 favored the present five point letter grade system.

Of the 16 students of the experimental group, 6 preferred the pass-fail system while 10 favored the present five point letter grade system.

Of the 160 students representing 42 percent of the student body at Carlisle Community High School, 51 preferred the pass-fail system while 109 favored the present five point letter grade system.

Table VI shows a comparison between the pass-fail system, the present five point letter grade system and the withholding of grades system according to student preference.

TABLE VI

A COMPARISON BETWEEN THE PASS-FAIL SYSTEM, THE PRESENT FIVE POINT LETTER GRADE SYSTEM AND THE WITHHOLDING OF GRADES SYSTEM ACCORDING TO STUDENT PREFERENCE

Grading System	9th Grade	10th Grade	11th Grade	12th Grade	Experimental	School
Withholding of grades	3	1	3	0	2	7
Pass-Fail	22	15	5	7	5	49
Present five point letter grade system	31	32	27	14	9	104
Total	56	48	35	21	16	160

Of the 56 freshman students answering the questionnaire, 22 chose the pass-fail system, 31 preferred the present five point letter grade system and 3 favored the withholding of grades.

Of the 48 sophomore students answering the questionnaire, 15 chose the pass-fail system, 32 preferred the present five point letter grade system and 1 favored the withholding of grades.

Of the 35 junior students answering the questionnaire, 5 chose the pass-fail system, 27 preferred the present five point letter grade system, and 3 favored the withholding of grades.

Of the 21 senior students answering the questionnaire, 7 chose the pass-fail system, 14 preferred the present five point letter grade system, and none favored the withholding of grades.

Of the 16 students of the experimental group, 16 chose the pass-fail system, 9 preferred the present five point letter grade system and 2 favored the withholding of grades.

Of the 160 students representing 42 percent of the student body at Carlisle Community High School, 49 chose the pass-fail system, 104 preferred the present five point letter grade system and 7 favored the withholding of grades.

Table VII shows a comparison between the pass-fail system and the withholding of grades system according to student preference.

TABLE VII

A COMPARISON BETWEEN THE PASS-FAIL SYSTEM AND THE WITHHOLDING OF GRADES SYSTEM ACCORDING TO STUDENT PREFERENCE

Grading System	9th Grade	10th Grade	11th Grade	12th Grade	Experimental	School
Pass-Fail	37	36	19	14	7	106
Withholding of grades	19	12	16	7	9	54
Total	56	48	35	21	16	160

Of the 56 freshman students answering the questionnaire, 37 preferred the pass-fail system and 19 favored the withholding of grades.

Of the 48 sophomore students answering the questionnaire, 36 preferred the pass-fail system and 12 favored the withholding of grades.

Of the 35 junior students answering the questionnaire, 19 preferred the pass-fail system and 16 favored the withholding of grades.

Of the 21 senior students answering the questionnaire, 14 preferred the pass-fail system and 7 favored the withholding of grades.

Of the 16 students of the experimental group, 7 preferred the pass-fail and 9 favored the withholding of grades.

Of the 160 students representing 42 percent of the student body at Carlisle Community High School, 106 preferred

the pass-fail system and 54 favored the withholding of grades.

Table VII shows a comparison between the present five point letter grade system and the withholding of grades system according to student preference.

TABLE VIII

A COMPARISON BETWEEN THE FIVE POINT LETTER GRADE SYSTEM AND THE WITHHOLDING OF GRADES SYSTEM ACCORDING TO STUDENT PREFERENCE

Grading System	9th Grade	10th Grade	11th Grade	12th Grade	Experimental	School
Withholding of grades	13	4	2	4	2	23
Present five point letter grade system	43	44	33	17	14	137
Total	56	48	35	21	16	160

Of the 56 freshman students answering the questionnaire, 43 preferred the present five point letter grade system and 13 favored the withholding of grades.

Of the 48 sophomore students answering the questionnaire, 44 preferred the present five point letter grade system and 4 favored the withholding of grades.

Of the 35 junior students answering the questionnaire, 33 preferred the present five point letter grade system and 2 favored the withholding of grades.

Of the 21 senior students answering the questionnaire, 17 preferred the present five point letter grade system and 4 favored the withholding of grades.

Of the 16 students of the experimental group, 14 preferred the present five point letter grade system and 2 favored the withholding of grades.

Of the 160 students representing 42 percent of the student body at Carlisle Community High School, 137 preferred the five point letter grade system and 23 favored the withholding of grades.

CHAPTER IV

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

The purpose of this experimental study was to examine a means of evaluating the effects on academic achievement and evaluating and observing anxiety levels of Algebra I students, based upon the withholding of all grades for a prescribed period of time. This study was conducted at Carlisle Community High School, Carlisle, Iowa. This chapter contains a brief review of how this was accomplished, conclusions of the investigator based on the data that were presented in Chapter III, and recommendations of further study.

All of the quantitative data contained in the research were obtained from a series of questionnaires administered at specific times throughout this investigation.

I. SUMMARY

No assumption was made prior to the study as to whether grade achievement would be higher or lower after the withholding of grades during the one semester investigation.

Forty-three students of the Carlisle Community High School of the 1969-70 school year enrolled in Algebra I were selected for this study. Nineteen students of the experimental group were compared with the progress of the control group which was comprised of twenty-four students. The method of instruction for both groups was primarily the same, that is,

based on teacher question-student response. A series of questionnaires was administered to both groups at specific times during the investigation. These questionnaires dealt with personal background, motivation, environment, study habits, and anxieties. The experimental group had their grades withheld for the first nine weeks. During the second nine weeks, the experimental group was divided into two smaller groups; one having their grades withheld until the end of the second nine weeks and the other receiving grades as did the control group until the completion of the investigation. The experiment lasted the duration of the first semester.

II. CONCLUSIONS

On the basis of the data presented in this investigation, the following conclusions were reached:

Grade Expectations

1. On the questionnaire administered at the end of the first nine weeks, all but one of the nineteen students in the experimental group had received the grade for the nine weeks that they actually expected. The one student who did not receive the grade that he expected underestimated his achievement by one letter grade.
2. During the second nine weeks' marking period, when the experimental group was divided into two separate groups, 7 of the 9 students of the experimental group

which received grades actually got the grade they expected. Two students underestimated their grades. One student underestimated his grade by two letter grades and the other by one. Of the remaining ten students of the experimental group who continued to have their grades withheld, nine received the grade for the nine weeks that they actually expected and one overestimated his grade by two letter grades.

3. The control group, aware of all their grades, received grades which they expected for both nine weeks.

As set down in the statement of the problem, one of the purposes of this study was to examine the effect of grade-withholding upon achievement. It appears reasonable to the investigator that the students were able to accurately assess their own grades despite the fact that grades were being withheld. They figured out by comparison where they stood in relation to their fellow classmates. The mere fact of such accurate expectations might suggest the constant awareness, scrutiny and consciousness of grades that students subject themselves to.

Students' Questionnaires

1. About 57 percent of the experimental students at the end of the fourth week of the first nine weeks; 47 percent of the same group at the end of the first nine weeks; and 42 percent of this group at the end of the second nine weeks were worried about their

grade in Algebra. Most of the students attributed this anxiety to not knowing what their grades actually were.

2. More than one-half of the experimental group throughout the study responded that they were studying more for algebra than any of their other courses. The primary reason given by these students was that they had to study more because they did not know where they stood. Another reason given was that algebra was more difficult than their other subjects.
3. More than three-fourths of the experimental group expressed their dislike for not receiving grades for tests and homework until the end of the nine weeks.
4. The experimental students as a whole did not significantly study any harder than they would have if they had known their grades.
5. More than 85 percent of the experimental group responded that they were not relaxed when they did not know their grades; whereas, more than 75 percent of the control group responded that they were more relaxed when they received grades after each test in algebra.
6. Approximately 89 percent of the experimental group did not want to wait until report card time, at the end of the nine weeks, in their other subjects to learn their grades.

7. About 68 percent of the experimental group did not want to wait until report card time to know their grade in algebra; but, approximately 93 percent of the control group did not wish to wait until report card time to know their grade in algebra.
8. Approximately 77 percent of the experimental group felt that they did not learn more by knowing their grades; about 69 percent of the control group believed that they learned more by knowing their grades in algebra.
9. About 74 percent of the experimental group felt that they would not have learned more if they had known their grades; whereas, about 83 percent of the control group believed that they would not have learned more if they did not know their grades.
10. When the experimental group was divided into two smaller groups, about 44 percent of the ones receiving grades felt relaxed, and 50 percent of the group not receiving any grades felt relaxed.
11. About 78 percent of the experimental group now receiving grades was glad that they were, while 80 percent of the group still not receiving grades was unhappy at continuing to be unaware of their marks.
12. Approximately 89 percent of the experimental group receiving grades felt that they had not learned any more now that they were aware of their grades, and

100 percent of the experimental group not knowing their grades, felt that they had not learned any more than if they had known their grades.

Grading System Questionnaire

1. Approximately 68 percent of the student body sampled at Carlisle Community High School favored the present five point letter grade system compared to 32 percent who favored a pass-fail grading system.
2. About 65 percent of the student body sampled favored the present five point letter grade system compared to 30 percent who favored a pass-fail grading system and 5 percent who favored the withholding of grades until the end of the nine weeks.
3. About 66 percent of the respondents favored the pass-fail system compared to 34 percent who favored the withholding of grades.
4. Approximately 86 percent of the sample favored the five point letter grade system compared to 14 percent who favored the withholding of grades.

As indicated by the grading system questionnaire, it appears to the investigator that students prefer the five point letter grade system which they are presently on as stated in Chapter I. Such a grading system provides the student with a relatively accurate account of his progress in terms of a letter grade. With such a system, students have the opportunity, as indicated on their questionnaires, to keep a close check on

themselves, avoiding the anxiety of guesswork in regard to their academic performance. Achievement levels can be improved upon at the discretion of the student.

The pass-fail grading system affords the student the ability to determine whether he is doing satisfactory or unsatisfactory work while denying him the knowledge of his letter grade, if he were being graded on such a scale. It seems that student incentive may easily be squelched when all levels of passing work are considered to be equal to a pass grade.

The withholding of grades until the end of the nine weeks leaves much to be desired by this investigator. It seems that if students are unaware of their grades, they may, depending upon their perseverance to achieve, be over-anxious to the point where their actual achievement is hindered. On the other hand, by not knowing their grades, they may constantly strive to excel in all aspects of their achievement. It is evident to the researcher at this point that academic achievement and anxiety levels because of the withholding of grades until the duration of the nine weeks vary greatly between individuals. This investigator found that some students with high anxiety levels worked harder and excelled in their academic performance while others hindered by high anxiety levels underachieved in their academic work. Furthermore, students with low anxiety levels increased in their academic achievement while others with low anxiety levels did very poorly. This investigator believes that these students

who performed poorly would have done so regardless of the grading system to which they were subjected.

It seems that these conclusions are consistent with those mentioned in the review of literature in Chapter II. The results of the student questionnaire did not bring forth any conclusive data or evidence.

III. RECOMMENDATIONS

From the data presented in this study, the following recommendations are presented:

1. A further study is needed in which an investigator would work with a larger group of students to determine whether or not anxieties of students affect their academic progress.
2. A further investigation could be conducted on the college level in conjunction with a psychologist who might be better trained and equipped to measure all aspects and trends of anxiety levels.
3. Students should be given the opportunity to select a grading system which provides the greatest progress in academic achievement with a minimum of anxiety.

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APPENDIXES

APPENDIX A

EXPERIMENTAL STUDENT QUESTIONNAIRE #1

GRADE EXPECTATION AT BEGINNING OF FIRST 9 WEEKS

Carlisle Community High School

1. Name _____ Date _____

2. Will you please check (x) the grade you expect to receive at the end of the first 9 weeks' marking period:

   A_____, B_____, C_____, D_____, F_____

3. Why did you choose the grade that you checked above?

APPENDIX B

CONTROL STUDENT QUESTIONNAIRE #1

GRADE EXPECTATION AT BEGINNING OF FIRST 9 WEEKS

Carlisle Community High School

1. Name _____ Date _____

2. Will you please check (x) the grade you expect to receive at the end of the first 9 weeks' marking period:

   A_____, B_____, C_____, D_____, F_____

3. Why did you choose the grade that you checked above?

APPENDIX C

EXPERIMENTAL STUDENT QUESTIONNAIRE #2-A

GRADE EXPECTATION AT THE END OF THE FOURTH WEEK OF THE FIRST 9 WEEKS

Carlisle Community High School

1. Name _____ Date _____

2. Will you please check (x) the grade you expect to have at this time:

   A_____, B_____, C_____, D_____, F_____

3. Why did you choose the grade that you checked above?

APPENDIX D

EXPERIMENTAL STUDENT QUESTIONNAIRE #2-B

STUDENT INVENTORY

Carlisle Community High School

1. Name _____ Age _____

   Please check (x): Boy _____ Girl _____

2. List other subjects that you are now taking besides Algebra I in the spaces provided.

   (1) _____ (5) _____

   (2) _____ (6) _____

   (3) _____ (7) _____

   (4) _____ (8) _____

Directions: Will you please check (x) Yes or No to indicate your opinion about each question. Some questions are followed by "Why?" Please respond as frankly and honestly as you can. Use the back of this sheet if necessary.

1. Do you participate in extra-curricular activities? (band, chorus, football, etc.)

   Yes _____ No _____

2. Do your parents pressure you on how well you are doing in school?

   Yes _____ No _____

3. (a) Are you worried where you stand in this class in regard to your grades?

   Yes _____ No _____

   (b) Why?

4. Do you study in a quiet place?

Yes _____ No _____

5. (a) Have your study habits changed since the beginning of this school year?

Yes _____ No _____

(b) If your answer is "Yes," why have your study habits changed?

6. (a) Are you studying more for this class?

Yes _____ No _____

(b) Why?

7. (a) Do you like being in this class?

Yes _____ No _____

(b) Why?

8. Do you study harder, because you do not know your grade?

Yes _____ No _____

9. Do you think it is fair to study for a test, and not receive a grade for it?

Yes _____ No _____

10. Are you more relaxed when you do not know your Algebra grades?

Yes _____ No _____

11. Are you more nervous when you do not know your Algebra grades?

Yes _____ No _____

12. Would you rather have no knowledge of your grades in your other subjects until report card time?

Yes _____ No _____

13. Do you think you have learned more in Algebra by not knowing your grades?

Yes _____ No _____

14. Do you think you would have learned more in Algebra if you would have known your grades?

Yes _____ No _____

APPENDIX E

CONTROL STUDENT QUESTIONNAIRE #2

GRADE EXPECTATION AT THE END OF THE FOURTH WEEK OF THE FIRST 9 WEEKS

Carlisle Community High School

1. Name _____ Date _____

2. Will you please check (x) the grade you expect to have at this time.

   A_____, B_____, C_____, D_____, F_____

3. Why did you choose the grade that you checked above?

APPENDIX F

EXPERIMENTAL STUDENT QUESTIONNAIRE #3-A

GRADE EXPECTATION AT THE COMPLETION OF THE FIRST 9 WEEKS

Carlisle Community High School

1. Name _____ Date _____

2. Will you please check (x) the grade you expect to have at this time:

   A_____, B_____, C_____, D_____, F_____

3. Why did you choose the grade that you checked above?

APPENDIX G

EXPERIMENTAL STUDENT QUESTIONNAIRE #3-B

STUDENT INVENTORY

Carlisle Community High School

Directions: Will you please check (x) Yes or No to indicate your opinion about each question. Some questions are followed by "Why?" Please respond as frankly and honestly as you can. Use the back of this sheet if necessary.

1. (a) Have your parents recently pressured you on how well you are doing in Algebra I?

   Yes _____ No _____

   (b) If your answer is "yes," what do you tell them?

2. (a) Are you worried where you stand in this class in regard to your grade?

   Yes _____ No _____

   (b) Why?

3. (a) Have your study habits changed during the first 9 weeks?

   Yes _____ No _____

   (b) If your answer is "yes," why have your study habits changed?

4. (a) Are you studying more for this class?

   Yes _____ No_____

   (b) Why?

5. (a) Do you like being in this class where no grades are assigned to tests or homework?

Yes _____ No _____

(b) Why?

6. (a) Do you study harder, because you do not know your grade?

Yes _____ No _____

(b) Why?

7. Do you think it is fair to study for a test, and not receive a grade for it?

Yes _____ No _____

8. Are you more relaxed when you do not know your Algebra grades?

Yes _____ No _____

9. Are you more nervous when you do not know your Algebra grades?

Yes _____ No _____

10. Would you rather have <u>no</u> knowledge of your grades in your other subjects until report card time?

Yes _____ No _____

11. Do you think you have learned more in Algebra by not knowing your grades?

Yes _____ No _____

12. Do you think you would have learned more in Algebra, if you would have known your grades?

Yes _____ No _____

APPENDIX H

CONTROL STUDENT QUESTIONNAIRE #3-A

GRADE EXPECTATION AT THE COMPLETION OF THE FIRST 9 WEEKS

Carlisle Community High School

1. Name _____ Date _____

2. Will you please check (x) the grade you expect to have at this time:

   A_____, B_____, C_____, D_____, F_____

3. Why did you choose the grade that you checked above?

APPENDIX I

CONTROL STUDENT QUESTIONNAIRE #3-B

STUDENT INVENTORY

Carlisle Community High School

Directions: Will you please check (x) Yes or No to indicate your opinion about each question. Some questions are followed by "Why?" Please respond as frankly and honestly as you can.

1. (a) Have your parents recently pressured you on how well you are doing in Algebra I?

   Yes _____ No _____

   (b) If your answer is "yes," what do you tell them?

2. (a) Are you worried where you stand in this class in regard to your grade?

   Yes _____ No _____

   (b) Why?

3. Do you study in a quiet place?

   Yes _____ No _____

4. (a) Have your study habits changed during the first 9 weeks?

   Yes _____ No _____

   (b) If your answer is "yes," why have your study habits changed?

5. (a) Are you studying more for this class?

Yes _____ No _____

(b) Why?

6. Do you think it is fair to study for a test, and not receive a grade for it?

Yes _____ No _____

7. Would you rather have <u>no</u> knowledge of your grades until report card time in Algebra I?

Yes _____ No _____

8. Are you more relaxed when you receive your grades after each test in Algebra I?

Yes _____ No _____

9. Are you more nervous or upset when you receive your grades after each test in Algebra I?

Yes _____ No _____

10. Do you **think** you have learned more in Algebra by knowing your grades?

Yes _____ No _____

11. Do you think you would have learned more in Algebra by <u>not</u> knowing your grades?

Yes _____ No _____

APPENDIX J

EXPERIMENTAL STUDENT QUESTIONNAIRE #4

GRADE EXPECTATION AT THE END OF THE FOURTH WEEK OF THE SECOND 9 WEEKS

Carlisle Community High School

1. Name _____ Date _____

2. Will you please check (x) the grade you expect to have at this time:

   A_____, B_____, C_____, D_____, F_____

3. Why did you choose the grade that you checked above?

APPENDIX K

CONTROL STUDENT QUESTIONNAIRE #4

GRADE EXPECTATION AT THE END OF THE FOURTH WEEK OF THE SECOND 9 WEEKS

Carlisle Community High School

1. Name _____ Date _____

2. Will you please check (x) the grade you expect to have at this time:

   A_____, B_____, C_____, D_____, F_____

3. Why did you choose the grade that you checked above?

APPENDIX L

EXPERIMENTAL STUDENT QUESTIONNAIRE #5-A

GRADE EXPECTATION AT THE COMPLETION OF THE SECOND 9 WEEKS

Carlisle Community High School

1. Name _____ Date _____

2. Will you please check (x) the grade you expect to have at this time:

   A_____, B_____, C_____, D_____, F_____

3. Why did you choose the grade that you checked above?

APPENDIX M

EXPERIMENTAL STUDENT QUESTIONNAIRE #5-B

STUDENT INVENTORY

Carlisle Community High School

Directions: Will you please check (x) Yes or No to indicate your opinion about each question. Some questions are followed by "Why?" Please respond as frankly and honestly as you can. Use the back of this sheet if necessary.

1. (a) Have your parents recently pressured you on how well you are doing in Algebra I?

Yes _____ No _____

(b) If your answer is "yes," what do you tell them?

2. (a) Are you worried where you stand in this class in regard to your grade?

Yes _____ No _____

(b) Why?

3. Do you study in a quiet place?

Yes _____ No _____

4. (a) Have your study habits changed since the first 9 weeks?

Yes _____ No _____

(b) If your answer is "yes," why have your study habits changed?

5. (a) Are you studying more for this class?

Yes _____ No _____

(b) Why?

6. (a) Do you like being in this class where no grades are assigned to tests or homework?

Yes _____ No _____

(b) Why?

7. (a) Are you studying harder in Algebra I, than you did the first 9 weeks?

Yes _____ No _____

(b) Why?

8. (a) Are you more relaxed the second 9 weeks in Algebra I?

Yes _____ No _____

(b) Why?

9. (a) Are you more nervous or upset the second 9 weeks in Algebra I?

Yes _____ No _____

(b) Why?

10. (a) Are you glad that you were placed in <u>your</u> <u>group</u> for the second 9 weeks?

Yes _____ No _____

(b) Why?

11. (a) Would you rather not know your grades in Algebra I until report card time?

Yes _____ No _____

(b) Why?

12. (a) Do you think you have learned more by not knowing your grade in Algebra I, first 9 weeks compared to the second 9 weeks?

Yes _____ No _____

(b) Why?

13. (a) Do you think you have learned more in the group you are in the second 9 weeks?

Yes _____ No _____

(b) Why?

APPENDIX N

CONTROL STUDENT QUESTIONNAIRE #5-A

GRADE EXPECTATION AT THE COMPLETION OF THE SECOND 9 WEEKS

Carlisle Community High School

1. Name _____ Date _____

2. Will you please check (x) the grade you expect to have at this time:

   A_____, B_____, C_____, D_____, F_____

3. Why did you choose the grade that you checked above?

APPENDIX O

CONTROL STUDENT QUESTIONNAIRE #5-B

STUDENT INVENTORY

Carlisle Community High School

Directions: Will you please check (x) Yes or No to indicate your opinion about each question. Some questions are followed by "Why?" Please respond as frankly and honestly as you can. Use the back of this sheet if necessary.

1. (a) Have your parents recently pressured you on how well you are doing in Algebra I?

   Yes _____ No _____

   (b) If your answer is "yes," what do you tell them?

2. (a) Are you worried where you stand in this class in regard to your grade?

   Yes _____ No _____

   (b) Why?

3. Do you study in a quiet place? Yes _____ No _____

4. (a) Have your study habits changed since the first 9 weeks?

   Yes _____ No _____

   (b) If your answer is "yes," why have your study habits changed?

5. (a) Are you studying more for Algebra I than your other subjects?

   Yes _____ No _____

   (b) Why?

6. Do you think it is fair to study for a test, and not receive a grade for it?

Yes _____ No _____

7. Would you rather have no knowledge of your grades until report card time in Algebra I?

Yes _____ No _____

8. Are you more relaxed when you receive your grades after each test in Algebra I?

Yes _____ No _____

9. Are you more nervous or upset when you receive your grades after each test in Algebra I?

Yes _____ No _____

10. Do you think you have learned more in Algebra by knowing your grades?

Yes _____ No _____

11. Do you think you would have learned more in Algebra by <u>not</u> knowing your grades?

Yes _____ No _____

APPENDIX P

GRADING SYSTEM QUESTIONNAIRE

Carlisle Community High School

I. Check the one best grading system that you would like to be on:

_____ 1. Pass-Fail grading system

_____ 2. Present A, B, C, D, and F grading system

II. Check the one best grading system that you would like to be on:

_____ 1. Withholding of all grades until the end of the 9 weeks period

_____ 2. Pass-Fail grading system

_____ 3. Present A, B, C, D, and F grading system

III. Check the one best grading system that you would like to be on:

_____ 1. Withholding of all grades until the end of the 9 weeks period

_____ 2. Pass-Fail grading system

IV. Check the one best grading system that you would like to be on:

_____ 1. Withholding of all grades until the end of the 9 weeks period

_____ 2. Present A, B, C, D, and F grading system